

AVIATION AND AIRCRAFT JOURNAL

NOVEMBER 21, 1921

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Vol. XI

NOVEMBER 25, 1921

No. 21

Aircraft and Disarmament

THE speech making address before the Conference on the Limitation of Armaments at which Secretary of State Hughes proposed a ten-year naval holiday and the stopping of seaplane armaments, British and Japanese capital ships, is probably destined in reference to aircraft. The main principle adopted in the conference is that "naval armaments shall be discontinued in the sailing down position, as a provision impossible of solution owing to the uncertainty of commercial aircraft for war purposes."

In the matter of aircraft carriers the Hughes program suggests that the total tonnage of these vessels shall be limited to 50,000 tons for the United States and Great Britain, and to 40,000 for Japan, that is, in proportion to the 5-5-5 naval strength suggested for these three powers.

In view of the naval matters with which Mr. Hughes proposed to put a stop to the war of naval armaments, his statement in the matter of naval aircraft and their carriers seems to us as a distinct surprise. This will be better understood in the light of a single sentence of Mr. Hughes' which, to our mind, contains the whole problem in a nutshell: *Preparation for future naval warfare shall stop now.*

Now it is obvious that these preparations consist mainly in the accumulation of offensive weapons, and not of defense ones. It is likewise evident that naval aircraft are presently designed in purpose, whether they be carried on board battleships or seaplane carriers, or whether they proceed on their own power. As an illustration of the defense value of aircraft, the landing experiments off the Virginia Capes have proved that landing airplanes operating from shore bases are fully capable of protecting vessels against attack by hostile fleet.

Naval aircraft are still in an experimental stage, much more so than military aircraft. The same remark applies to aircraft carriers, a type of war vessel which is still so experimental that no country has as yet developed any ship which may be considered as even a permanent standard type.

There is no connection with naval construction which is ascribed to hear that of the three newest British aircraft carriers now, the Eagle, is a converted battleship, another, the Farnham, is a converted battle cruiser, while the third, the Ironside, is a converted "auxiliary cruiser." Among the older British aircraft carriers there were converted liners and cargo boats. In our Navy, the Langley is a converted sealer, while the Wright is a re-built Shipping Board vessel. A more heterogeneous assortment of "wrecks" it would be difficult to find.

With respect to Mr. Hughes' reference that the limitation of naval aircraft is a provision incapable of solution owing to the uncertainty of special types of commercial aircraft for war purposes, this sentence seems to us lacking in definiteness. Civil aircraft are undoubtedly adaptable to purposes of war

on land, but we strongly doubt whether the same thing applies in the case of naval warfare. A big passenger airplane may be converted into a battleship, but whether a commercial airplane is susceptible of use as a fast seaplane or as a torpedo carrier we leave it to naval officers to suggest an expert opinion. We do not doubt that their opinion will be an emphatic No.

That those who believe in aviation should feel encouraged by the developments so far is evident. While later developments may attempt to place limitations on the utilization of aircraft, the fundamental fact that airplanes used for commercial purposes are convertible to war use is now established beyond the point of controversy.

Night Flying

TECHNICALLY speaking, the development of commercial aeroplanes is still a many-sided problem. Its solution depends largely on a proper combination of details with respect to the actual conditions imposed for different routes. There is one need however, having such wide application, that we may all do well to keep constantly working toward it. The one thing that will do more than anything else to get commercial aviation on its feet in this century is night flying.

Efficient and safe night flying is bound to come. It must come if aircraft are to attain an important place among our transportation systems, for it is usually the only way in which we can take full advantage of the speed. Under many varying conditions that one improvement holds. Let us not forget—it should be constantly on the designer's table, on the reviewer's desk, and plainly in view of the promoter until the object is accomplished—"develop night flying!"

Comparisons

COMPARISONS are especially odious when a finished product is compared with one in process of evolution. But it is usually stimulating and instructive to examine a supposed perfected development of anything. In this case we refer to the new White Star liner *Majestic* (originally to have been the *Bismarck* of the Hamburg American Line). A booklet describing this leading superliner, as she will appear when put into service, has just reached us. We recommend it to anyone interested in transportation problems, especially of aircraft, for it is a living example of what can be done simply by considered straightforward development.

We look forward to the day when large ships will supplant for passenger traffic even such splendid ships as the *Majestic*. We are one day that this will take time to accomplish, but for any who are faithless the *Majestic* itself is the one best proof that it can be done.

Merits, Daytime-Wright, and Handley Page wings) tends to accentuate these characteristics to a high degree.

The desirability of metal construction is continuously broadened up with the externally braced wings. For example, in wing spans having a depth less than six to eight inches, the great increase in cost and doubtful saving in weight make metal construction appear undesirable. For greater depths, the elimination of stresses external to the wing metal gradually necessary, and for high stresses there is no question that it must be used. Moreover, for the latter case, metal construction is definitely lighter and better.

Tendency Toward Thick-Wing Monoplanes

The apparent tendency at present is toward the monoplane, when that wing can be so used. There are obvious aerodynamic advantages in the use of a wing of this type (the great weight) aerodynamically efficient. But this advantage is partly fictitious. The aspect ratio must usually be lower, and (with certain exceptions) the structure must be appreciably heavier.

There are some serious objections. In an internally braced monoplane, each wing must be built as a unit (unless both

wings are joined in a single unit), and usually the number of different parts is large. Furthermore, these parts, if they require far more labor per unit than is required in wood construction. The result is observed. Moreover, if the wings are built up in this form, damage in any part of the modern repair exceedingly difficult. Replacement of parts equally becomes impossible. For ordinary shipment, the disassembly of a box car represents the last limitation imposed on internally braced machines.

It appears, therefore, that internally braced monoplanes with variable number wings are logical for racing planes, a wheeled airplane, speed in economy. Varying monoplanes will bring varying solutions in the small and medium and planes, without thick wings, without and semi-internal bracing, and metal construction should be more frequent in the future. For large planes, the monoplane is not always economical in the present state of the art, and should disappear, while thick wings, semi-internal bracing, and metal or composite structures will undoubtedly grow. It is probable that within two or three years the present design trends will give way toward the types which analysis indicates is superior.

Airships for Passenger Transportation*

By Ralph Upson

For reasons which will be brought out later, the inevitable trend of airships is toward even lower than any air structure known. Hence the first question which will be taken up is to include the whole subject of airship development. To cover such a subject in the limited time available we can do no more than "hit the high spots." I shall do this simply by answering various common questions about airships, and bringing out facts which are little known or appreciated by most people, and which have been thoroughly proven and recognized by competent authorities.

The first question that naturally comes up is "What special qualities does the airship have in comparison with other means of transportation?"

The comparison with a steamship is especially simple, since it works on the same principle—buoyancy. Its own weight of the hull is what it floats. But here the similarity ends, for the airship has about ten times the power efficiency. Assuming equal tonnage and speed an airship takes only about 1/10th the power of a steamship, or for equal horsepower it can go over twice as fast. In rough weather it is also more comfortable.

Compared with road or railroad transportation, the airship goes straight to its destination on a route prepared by nature, practically independent of what lies between, and without any suggestion of traffic.

In contrast with airplanes, the airship is specially adapted to compare passenger and cargo, and the space of goods which have a high "time value," that is, where the saving of time is worth while. But there is no reason for competition between the two, for the field of the airplane is obviously for high loads carried relatively short distances at very high speeds. The airship on the other hand is more economical for low loads, great distances, and speeds considered low than most airplanes, although greater than for any other means of transportation. These qualities give it particular advantages in any way or another except for the particular purpose which they apply. There is no reason however in which the airship is fundamentally superior to ground-day airplanes, that is, in its ability to travel safely and comfortably by night, in bad or bad, night or day, makes no difference to a big airship. It does not go as fast as the plane.

How big could an airship have to be for an Omaha-Chicago-New York service?

* This question is the Subcommittee on Congress, Omaha, Neb., Nov. 18, 1931.

Chicago-New York service? Very much the same as that of an automobile—distances, flying time, loads, speeds, overheads, and, probably a smoking zone. The usual reason of

would be imposed solely by the amount of traffic available. From an economy standpoint alone it would be worth while going to such a size of about 30,000,000 cu. ft. Such a ship could carry nearly 200 tons of useful cargo at a net cost of about \$100 per ton (Omaha to New York, 28 hours service) and 2,000,000 cu. ft. ship would carry 25 tons at more than double the above net per ton, but still cheap for certain classes of goods and well as much for passenger service. For any traffic less than this it would probably be preferable to use airships from Omaha to Chicago, and from there on by airplane.

What type of airship would be best for this purpose? The question can be properly answered only after a detailed study of the requirements and conditions of the service. Efforts have been made to design various types of construction supposed to be more or less distinct—the semi-rigid, semi-rigid, and rigid. But present indications are that these terms will become practically obsolete as time goes on. In the first place, it is commonly used, they are very loosely applied and have definite technical significance. Secondly, so far as the principles are concerned, each type of construction is being used and more adapted with advantages features borrowed from the other two. This makes it probable that the successful commercial airship of the future will have roughly the last improving design for purpose without any conscious effort at a choice of "types." In the next way a competent mathematician, in answering a new problem, does not worry about whether it is an arithmetic or algebra or trigonometry or statistics. He goes at it with all the weapons at his disposal with equal thought when they come first.

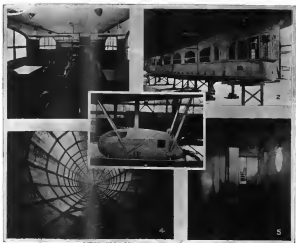
What kind of materials would be necessary? For airships along the field made by me months and laid on for airplanes, but it is probably better to leave it to the rule of better "prefer" to be made of steel, or possibly of aluminum, or possibly to have a big hangar at every airship stop. With present types of envelope covers, which develop after time when exposed, it is simply a matter of consent to use hangars wherever the ship is to operate much time. With the advent of commercial transportation, however, we have every reason to believe that protective surfaces will be developed that will make hangars practically obsolete in connection with airships. There are now many materials which will serve for construction, repair and storage purposes for airships.

What sort of accommodations might be had on a big passenger airship? Very much the same as those of an automobile—distances, flying time, loads, speeds, overheads, and, probably a smoking zone. The usual reason of

November 21, 1931

AVIATION

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DETAILS VIEW OF THE RIGID COMMERCIAL AIRSHIP "WOBURN", WHICH GERMANY SUBMITTED TO FRANCE UNDER THE TERMS OF THE PEACE TREATY. (1) INTERIOR VIEW OF THE 30-PASSENGER CABIN. (2) THE MAIN CAR, CONTAINING THE COALBURN, ENGINES, AND POWER CAR. (3) THE MAIN POWER CAR, POWERED WITH TWO 200 HP MAYBACH ENGINES. (4) INTERIOR VIEW OF THE HULL. (5) AIRSHIP BEING LOWERED FROM THE PASSENGER CAR BY A DERRICK AND WINDROPE.

airship would be by elevating up the mooring tower to the level part of the main envelope. It is also quite possible that some practical course may be worked out to deliver and take off passengers outside by means of ladders.

How much danger would there be due to storms and wind? This is mainly a matter of going the ship enough reserve of speed and fuel to get around or past any storm cloud that may come up. A maximum speed of 30 mph and a fuel reserve envelope 35 per cent is plenty for most cases. For which is one of the greatest hazards to airship travel, is no serious obstacle to a properly equipped airship. It is of course a first step in the development of a ship, and it is for any structure on which human life depends.

How about the danger of fire? This is indeed a serious question, as it is almost the only source of risk, outside the crash itself, that airship travel has. To answer it we must first drop certain popular misconceptions.

Hydrogen gas is not explosive unless mixed with at least 1 per cent of air, and never be allowed to collect. As long as the gas is confined to its proper space there is no

source danger of its exploding, then for the gas is an unforgotten truth to explode. The principle danger is not the inflammability of the gas but the very inflammability of most present day envelope materials and fuels. When we get improved envelope materials and heavy oil engines for accurate use, airships are no longer work will be much better safeguarded than by use of helium gas. The non-inflammable helium gas will be a big asset for military use where a ship is liable to be shot through with incendiary shells, but it will be neither necessary nor desirable for commercial use.

Coming back again to the broader aspect of commercial developments, it may be admitted that no need today beyond the present state of construction. The typical Ruppel construction, the only one on far used for large ones, is undoubtedly too delicate and expensive to hold its preeminence long as a sturdy commercial design. But whatever the truth will stand the extra expense there is certainly no harm in using temporarily a construction which has at least proved to be practical and safe. For most of all we need experience in the quiet commercial operation, wherever it can be made to pay at all.

Charles Doolittle Walcott

Charles Frederick Smyth

Joseph Pugh Norfleet

James Earle Dunlop

[illegible]

Cyrus Jehoshaphat Zimmerman

Herbert Eugene Lee

James Irving Menefee

James H. Hays
Washington, Va.

Ernest Wilhelm Diekmann

Address: _____ Phone: _____

17. In every group, 30 to 35 min. and 20 to 25 min. are spent on the 1000 ft. (3000 ft.) climb. (Blackwell) Ranch.

May 10, 1914 Seed Plant, 1914
Flower Yellow Scent: Strong, sweet

Nathan Brown Chase

Notes

[illegible]

William George Wilham

B. Russell Shaw

July 2012

Frank Man	Federal Organization	Ministerial
1978-84	Advisory	Working Group

2000

Boy Carrington Kirtl

as a member of the 1980-81 season, and as a member of the 1981-82 season.

1500-1510

Kenyon Woody

An Ice Shed

The accompanying picture shows an interesting type of installation, the design and work of A. G. Maraville, 153 Russell Ave., Akron, Ohio.

The framework is of structural steel angle iron, 16 ft. wide at the base where two runners 4 ft. long of $\frac{1}{2}$ in. boiler plate are bolted, mounted between heavy angle-iron truss. All joints in the framework were bolt riveted.

The body of the shed is of plank construction 11 ft. long by 2 ft. wide with iron stanchions accommodating 16 people. This body is mounted on runners by means of a track sole. Steam-



ICE SHED CONSTRUCTED BY A. G. MARAVILLE OF AKRON, OHIO

ing is done by three runners connected in an automobile steering wheel. The sloping front of the body offers little wind and protects the occupants well—so well in fact, that when the shed is travelling at full speed the driver can smoke without the driver's seat.

The engine is mounted on the framework, and is a Hall-Scott 4 cylinder vertical model mounted to drive a pump propeller. The radiator mounting (between driver's propeller and engine) is bolted between the propeller and the engine with shifter control for independent operation. A complete set of instruments is mounted on an instrument board before the driver's seat.

The engine mounting is rather high but is effective in the control that it turns made even at the full speed of 60 m.p.h. The runners do not leave the ice. The sled when loaded on a small area of ice performed satisfactorily and is reported to do even better when given more space for its speed.

The Navy Secretary's Flying Boat

The new air-passenger flying boat constructed for the Secretary of the Navy at the Naval Aircraft Factory, Philadelphia, has been flown to the new air station just across from Washington, where it will be kept until it is taken to Secretary Denby. It was piloted by Commander Richardson and Lieutenant McCall of the Navy Aircraft Division, who were accompanied by four naval officers as passengers.

The machine which is very standard in design, is a FIL type, has a span of 165 ft., weighs 14,000 lb. completely outfitted and is equipped with two Liberty engines. The top speed is 50 m.p.h.

Ample space has been provided on the machine for passengers and crew. There are two compartments, one large observation and pilot room with port holes and the other a well furnished cabin with chairs and table.

Civil Airline at Dallas, Tex.

The Austin Aviation Co. of Dallas, Tex., recently issued a 45-cent ticket of land near the city and will build a hangar in the next few weeks. It will then be prepared to give service for the business of aerial traffic and will maintain a constant force of mechanics, repairmen, etc. The land is located just outside the city limits and there and a half mile from the business section. The electric line runs within one block of the field, which is on the University Road and Marking Road. Last conditions in this territory.

The firm hopes to build a permanent business in aerial transportation with other and table.

Explosion Prevents Drug Smuggling

An interesting report on how a patrol of Canadian government flying boats succeeded in stopping drug smuggling on the Pacific Coast appears in General Progress Report No. 10, Air Division of Canada. The report says:

Further reports from the Junior Beach Air Station at Vancouver, B. C., give evidence of the increasing success of the air patrols in freighting, to a large extent at least, the coast of Vancouver. Last December the Canadian flying boats on the Pacific Coast, where airplanes have been placed at the disposal of the customs officials in their fight against the drug smugglers.

In a recent letter on the subject to the Air Station Superintendent at Junior Beach the Collector of Customs at the Port of Vancouver wrote as follows:—

"I am pleased to state that following my two trips to Newsum by plane we have been successful in stopping a number of smuggling boats about \$1,500 worth of opium. The result is that it was necessary, due to returning air information, to change our plans at the last minute, and because of the short time it was only possible to do so by making the trip by plane."

The actual taking of the bootleggers, while very gratifying, and it is said, worthy of the fact that we have disclosed the point and method of smuggling, but we have realized for some time past that the drug smugglers had adopted some new plan, rather than Vancouver for directly landing their drugs, the drugs later being taken away to Vancouver, and we now feel that the second road in the campaign has been won. Without the assistance given by your planes this smuggling probably would have gone on at a rate for a number of months but we could have actually demonstrated what was being done.

You will realize in this case that the situation rapidly changed and that the bootleggers were forced to adopt some new plan. It is not possible to be sure of the success of the campaign until the bootleggers are completely broken up. It is only by the use of planes that such success can be achieved. From a number of months but we could have actually demonstrated what was being done.

It is not possible to be sure of the success of the campaign until the bootleggers are completely broken up. It is only by the use of planes that such success can be achieved. From a number of months but we could have actually demonstrated what was being done.

The Airplane in Future Wars

"The airplane will be the most destructive force in the next war. It will be fought with all the terrible and terrible inventions that the mind of man can conceive," according to Mr. Hudson Hynes, the noted inventor, in an address recently delivered before the Dayton, Ohio, Chamber of Commerce.

Mr. Hynes declared that it will be possible to send the airplane anywhere, and there will be no force that will be able to stop it effectively, that when the next war starts the airplane forces will prove the greatest enemy of the navy, as super-dreadnaughts and the latest inventions for naval warfare will not be able to fight this enemy in the sky. It will be necessary for the United States to have a secret source of the air which will equal that of any other nation and which can be easily converted into war machines. Without any such force, he said, any country will be at the mercy of a nation which can easily convert its civil aircraft into war machines. The airplane is the only solution for the problem. Airplane production must be made so that ships will be perfectly safe, that it will be possible to establish a merchant marine with means of production of ships on a great scale both for industrial and military purposes.

Air Service May Map Vermont

Army officers attached to Fort Eddy Air Camp at Burlington, Vt., have notified the commander of the First Corps Area that for military purposes the northern section of Vermont should be mapped from the point of view of the Air Service. The subject is being taken up by Maj. Edwin B. Lyon, who recently offered to Vermont and should see investigation at a town hall meeting in the town of 3000 odd square miles from Barre to the Canadian border.

According to Colonel Abbott there are great tracks through the Green Mountains bordering Lake Champlain and even scattered, which have and have not. The result is that the Vermont Air Service troops would be handicapped, so as to travel merely when military trucks had several efficiency. It is Colonel Abbott's plan to proceed through it will be the first time in New England that such an expedition has been undertaken. A few weeks ago two Army men, Capt. Albert W. Stevens and Lieut. Leigh Wade of Dayton, O., took a series of photographs of the White Mountains, but their work was of an experimental nature, with a view to showing the best manner in which the Vermont Air Service has shown an active interest in the project and personally favors the proposition.

When these Burlington men, who will map the country, will have a number of good landing fields at their disposal. The mountainous section of Burlington is excellent, while there are other fields at the Adams and the Vermont State is planning to establish a field and, if the power of the Vermont Air Service is sufficient, the water, that the first step by spring 1922 Burlington is to have a permanent landing field in place. In fact, Vermont is advancing the development of aviation.

Owing to the limited personnel of the Air Service, it will be necessary to receive outside aid for the work. Arrangements have been made whereby an observation squadron and a photographic section stationed at Bristol Field, New York, may be called upon to do work in the First Corps Area, Vermont, and Louisiana. While perfect conditions are not possible, conditions are such that it will be a little over a week to complete the Vermont proposition.

Pioneer Instrument Co. Expands

During the past three years the Pioneer Instrument Co. of St. Louis, Mo., has expanded its business, and its instruments of aircraft instruments has found it necessary to progressively increase its organization and manufacturing facilities.

The company now represents the opening of a Pacific Coast branch in charge of William H. Rice, at 809 Post Street, San Francisco, where a complete line of Pioneer instruments may be obtained.

New Auto Spark Plug Based on Aviation Experience

The B. G. Corp. has now in production an automobile spark plug which has been developed from the company's experience in producing for the permanent a highly efficient aviation spark plug, which holds the principal aviation speed and endurance records in the United States.

Like an aviation producer the B. G. auto plug is known as "the plug which doesn't sputter" and is especially efficient in giving complete ignition in cold weather. The manufacturer guarantees a carbon and fuel saving.

Swiss Flying Boat Completes 1000 Mile Flight

Two Swiss airplanes of the S.24 type recently flew from Basel, Switzerland, Italy, to the Spanish military naval air station of Cartagena, averaging successfully the distance of 1000 miles with no mishaps. The excursion.

The airplanes were piloted by Lt. Comdr. Umberto Maddalena and by Sergeant Umberto Maddalena, each having a certificate on board. The two airplanes are destined for service in Morocco.

Sergeant Chambers' Parachute Drop

Sergeant Earl Chambers of Post Field, Fort Belk, Garrison, Idaho, is believed to have established a new world's record for high altitude jumping when he fell 24,850 ft. at the American Legion flying meet in Kansas City. The descent took 15 minutes.

Sergeant Chambers' former record was 22,000 ft. This was broken by Lieutenant Hamilton at Bristol, Ill., last summer when he made a jump at an altitude of 22,075 ft. Representatives of the Army Club of America have and the medal brought to Washington to have the strafe verified.

Both Chambers and his pilot, Wendell Brookley, were



SGT. E. CHAMBERS (LEFT) AND LIEUT. WENDALL BROOKLEY (RIGHT) OF POST FIELD, FORT BELK, IDAHO.

equipped with oxygen tanks and special air-line clothing. The ascent took an hour and a half. Airplane work was completed.

When the flight had reached the "rafting" Brookley gave the signal and Chambers climbed out on the fuselage. There he dove into the water. According to Chambers, he dropped fully 500 ft. before his parachute opened. Chambers said that he suffered seriously from the below-zero temperature during the early portion of the descent. He also said he lighted a cigarette and smoked it during half of the downward journey.

Navy to Test Diesel Flying Boat

The Secretary of the Navy has ordered the following: The Navy Department is making a special demonstration of the Diesel engine in a flying boat, at the Naval Aircraft Factory, Philadelphia, Pa., for the benefit of naval architects and engineers. It has been the policy of the Navy Department to purchase aircraft engines of solid construction in order to study the latest developments in the art. These tests at Philadelphia will include demonstration in flight of the Diesel flying boat, which is a post-war product of the Grumman Co., and was specially designed for commercial passenger service. Several other examples of foreign construction will be available for the detailed examination of the engineers who have been invited.

General Mitchell in New Record

Brigadier General Mitchell set a new record in flying from Dayton, Ohio, to Washington, a distance of 220 miles which he covered in 2 hr. 35 min. on a E-64 plane with a maximum, on Nov. 3. He took off at McCook Field at 5:00 a. m., and reached Bolling Field at 12:25 p. m., flying two-thirds of the way with no mishaps. He was accompanied by a crash crew. He suffered considerably from the air pressure on the descent, which is not unlike "nose bloods."

Rearview Squads Organized

Major W. O. Schaeffer, A.S.R., has been recommended as commanding officer of the 27th Observation Squadron, 77th Division of the Second Corps Area.

Foreign Aeronautical News

United

In order to afford N.A.F. officers facilities for advanced technical studies, arrangements have been made for a limited number of officers to attend certain courses at the principal universities in the country. These courses have been instituted mainly to enable officers to qualify themselves for technical duties in engineering, wireless, navigation, research and other branches. The courses are the following: Special course in engineering subjects at Cambridge University; post-graduate course at the Imperial College of Science and Technology ("Design and Engineering"), special course in aeronautical research, also at Imperial College, course in mathematics and hawking subjects at universities in the United Kingdom.

While attending these courses, officers will receive full pay and allowances of their rank, and will be required to pay all personal expenses. Those taking the mathematics course will also be called upon to pay all university and other fees, and, in some cases, take the post-graduate course at the universities. The cost of the fee, payable to the college. An officer will not be eligible to attend a university course unless he holds a permanent commission and holds various other conditions.

Italy

Italy is said to be contemplating the inauguration of an aerial post and passenger service from Genoa via Mexico, Berlin and Copenhagen, to Stockholm. The flight is expected to take 10 hours.

Japan

Japanese newspapers report that the Army Balloon Corps will participate in the maneuvers with the Imperial Guard Division at Suifu near Mt. Fuji. The model R engine balloon will be used for observation purposes. Five officers of the Balloon Corps and several additional observation officers will take part.

Two civilian aviation students at the Army Flight School at Yokohama graduated Aug. 31. This is the first civilian class at Yokohama, but it is expected that these classes will be continued regularly in the future.

A small, non-rigid type airship was recently purchased by the Japanese government from the Vickers Co. London, according to the Japanese press. Another Japanese ship performed its first test of four hours continuous flight successfully, only thirty men being required to handle it, and it ascended and descended very readily. The airship is described as being "one ship" in the center, capacity five men, and with a speed of over 50 m.p.h.

The graduation gift of the Naval Air School at Yokohama took place on July 10. The course was from Oryama (near Yokohama) to Misaki and return, six graduates taking part. Only one machine reached the latter place, the other planes being forced to descend close the sea. Bad weather conditions prevented this one plane from attempting the return journey.

Portugal

A regular daylight airplane service between Paris and London is announced by the Portuguese Aerial Navigation Co. for this winter. Next year it is proposed to extend the line to London, Bristol, Amsterdam and Berlin.

Spain

A new air line is to be opened between Sevilla, Spain and Laredo, Mexico. The service will be operated by the Sevilla-Laredo Air Transport Co., and is to be a daily one. All machines are to be used.

According to Mr. Perry, a British pilot in the employ of the Bristol Co., who has been engaged in flying airplanes to Spain, that country is an ideal one for any enterprise firm which has a few machines and is prepared to try itself out for business. It appears that the Spanish local population in many of the towns and villages are so keen on flying that they are ready to pay quite large sums to a firm who will undertake to give a flying week in their particular locality, while the enthusiasm for the Spanish for flying would also mean a considerable amount over and above any sum the enterprise might give.

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FACTS ON FLYING BOAT TRANSPORTATION

First Annual Report of Commercial Aviation Operations ever made in the United States compiled by the Aeromarine Airways for the Bureau of Aeronautics, Navy Department, Washington, D. C. For the Year ending October 27th, 1921.

From: AEROMARINE AIRWAYS, Inc.
also Times Bldg., New York City.

To: ADMIRAL W. A. HOFFERT,
Bureau of Naval Aviation,
Navy Building,
Washington, D. C.

Subject: First Annual Report of Commercial Flying Operations.

TOTALS

Passengers carried 6,814
Miles flown 56,020
Accidents NIL
Mail and freight (lbs.) 29,062

The operation of the Aeromarine Navy Flying boats in the commercial transportation of passengers, mail and freight for the period commencing October 21, 1920 and ending October 27, 1921, is herewith submitted.

1. The above-mentioned flying coaches of 121 type in operation carried 1,044 passengers 47,000 miles in the air and transported 56,020 lbs. of freight and baggage, exclusive of crew.
2. The Navy Coast Patrol flying boats of 185C type carried 4,542 passengers 26,820 miles in the air, exclusive of crew.
3. These Aeromarine three-place flying boats carried 1,000 passengers 35,000 miles, exclusive of pilots.
4. Not a single passenger or employee was injured during these operations. The schedule was maintained throughout with the exception of four forced landings during adverse weather conditions which caused only slight delays. These delays were due to the fact that the boats were not equipped with floats in some instances.
5. The flying boat "MIRA" was seen from her airbase on sight in Havana Harbor during a recent trip, being against some rocks and damaged beyond repair. It was then abandoned at the time.
6. The services mentioned include Key West - Florida; Florida - Bahamas Islands; New York, Atlantic City and New England ports; New York Night Service; New York - Albany; Great Lakes region; Chesapeake Bay and Virginia.

SUMMARY

The above-mentioned Navy Flying boats operated in the Key West - Havana service during the winter months, after which they all have been laid up for the summer. The remaining boat, "JAMES HARRIS" has undertaken a flight from Key West up the Atlantic Coast to New York, via the Florida Keys, over Cuba, Puerto Rico and Guadalupe, along the coast of Mexico to Chicago and thence by way of the Hudson and Chesapeake Rivers to New Orleans, thence along the Gulf to Key West, a total distance of 2,000 miles.

Of the ten 185C flying boats (over seven in constant operation and two were in reserve. One of these boats made a complete circumnavigation of the Great Lakes flying 7,400 miles and carrying 100 passengers; another crossed the New England States.

For operations during the coming year one of the Aeromarine Navy three passenger flying coaches will be placed in operation on the Key West-Havana route and between Palm Beach and Miami and Miami and Havana; two other flying coaches of the same type will be held in reserve for summer charter parties.

For the other service lines of the Aeromarine Airways the 185C type will be placed in active operation and two others will be held in reserve for special charter.

Three of the Aeromarine three-place flying boats will be used for special services and special charters, two of these same type will be in reserve.

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